B1 waveguides 52a. Similarly, when radio frequency is employed to irradiate the heart or a portion thereof, the radio transmitter 59 replaces the electrical controller. --

IN THE CLAIMS:

B2 1. (Amended) A method of modifying the activity of the heart, or of a portion thereof, comprising applying to said heart, or portion thereof a non-excitatory electric field of a magnitude, shape, duty cycle, phase, frequency and duration suitable to obtain [the] a desired change, wherein said field is applied at a time [such as to be] at which it is unable to generate a propagating action potential.

B3 3. (Amended) A method according to claim 1, wherein the step of applying non-excitatory electric field comprises applying an alternated current electric field.

4. (Amended) A method according to claim 1, wherein the step of applying non-excitatory electric field comprises applying an electric field that has a temporal envelope selected from the group consisting of an exponential temporal envelope, a sinusoidal temporal envelope, a square temporal envelope, a triangular temporal envelope, a ramped temporal envelope, a sawtooth temporal envelope and a biphasic temporal envelope.

B4 11. (Amended) A method according to [any one of] claim 1, comprising sensing the activation of a portion of the heart at a suitable location, and thereafter calculating or estimating therefrom the activation time of the portion of the heart the activity of which it is desired to modify.

B5 ~~13.~~ 14 (Amended) A method according to [any one of] claim 1, wherein the portion of the heart the activity of which it is desired to modify comprises a plurality of sub-portions

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having each independently defined activations, and wherein separate non-excitatory electric fields are applied to a plurality of said sub-portions, independently or in synchronization with one another.

15 ~~14~~. (Amended) A method according to [any one of] claim 1, wherein the activation of the heart, the heart chamber, or of portions thereof, is obtained by pacing, and wherein the application of the non-excitatory electric field is synchronized with the pacing signal and is effected with a timing relative to the pacing signal.

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16 ~~15~~. (Amended) A method according to [any one of] claim 1, wherein a defibrillating signal is provided to the heart, and wherein the application of the non-excitatory electric field is synchronized with said defibrillating signal.

24 ~~16~~. (Amended) A method of performing cardiac surgery comprising applying to the heart, or to a portion thereof a non-excitatory electric field of a magnitude, shape, duty cycle, phase, frequency and duration suitable to control the electro-mechanical activity of the tissue in the area on which surgery is to be performed, wherein said field is [such as to inhibit] inhibitory of a propagating action potential, and thereafter performing the required surgical procedure on said area.

29 ~~17~~. (Amended) A method of performing cardio-vascular surgery comprising applying to the heart chamber or to a portion thereof a non-excitatory electric field of a magnitude, shape, duty cycle, phase, frequency and duration suitable to reduce the output flow, contractility, or pressure thereof, when surgery is performed on tissue perfused by the flow of said chamber, wherein said field is [such as to be] unable to generate a propagating action potential, and thereafter performing the required surgical procedure on said area.

26 ~~18.~~ (Amended) A method of reducing an output of a chamber of a heart, comprising applying to a portion of said heart chamber a non-excitatory electric field of a magnitude, shape, duty cycle, phase, frequency and duration suitable to obtain [the] a desired change, wherein said field is applied at a time [such as to be] at which it is unable to generate a propagating action potential, and wherein reducing the output of the chamber is obtained by reducing the reactivity of said portion, or its sensitivity, to an activation signal, or by reversibly blocking its conduction pathway.

27 ~~19.~~ (Amended) A method of treating an abnormal activation of the heart, particularly fibrillation, comprising applying to said heart or to a portion thereof a non-excitatory electric field of a magnitude, shape and duration suitable to treat the abnormal activation condition, wherein said field is [such as to be] unable to generate a propagating action potential.

19 ~~23.~~ (Amended) A method according to claim 1, wherein the application of the non-excitatory field is repeated during a plurality of heart beats, and wherein said repeated application is effected by skipping the application of the field to some of the beats in a train of consecutive heart beats [and/or by reducing the frequency at which the beats are skipped is gradually reduced, and/or by changing between beats the size of the portion of the heart to which the field is applied].

28 ~~24.~~ (Amended) A method of modifying the electro-mechanical activation of at least a portion of a heart, comprising mapping the activation profile of the portion, determining [the] a desired change in the activation, and modifying the conduction velocity in a non-arrhythmic segment of the portion, wherein the non-excitatory electric field is of a

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magnitude, shape, duty cycle, phase, frequency and duration suitable to obtain the desired change.

29 ~~25~~. (Amended) A method of modifying the activation profile of at least a portion of a heart, comprising mapping the activation profile of said portion, determining the desired change in the activation profile and changing the refractory period of at least a segment of the portion, wherein the non-excitatory electric field is of a magnitude, shape, duty cycle, phase, frequency and duration suitable to obtain [the] a desired change, and wherein said segment is selected from a segment that is not part of a reentry circuit or an arrhythmia focus in the heart, a segment that is a part of a reentry circuit or an arrhythmia focus in the heart, or an ischemic segment.

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30 ~~26~~. (Amended) A method of modifying the activation profile of at least a portion of a heart, comprising mapping the activation profile of said portion, determining the desired change in the activation profile and reversibly blocking the activation of at least a segment of the portion, wherein the non-excitatory electric field is of a magnitude, shape, duty cycle, phase, frequency and duration suitable to obtain [the] a desired change, and wherein said segment is selected from a segment that is not part of a reentry circuit or an arrhythmia focus in the heart, a segment that is a part of a reentry circuit or an arrhythmia focus in the heart, or an ischemic segment.

B7 ~~30~~ 32. (Amended) Heart control apparatus, comprising circuitry for generating a non-excitatory electric field, and electrodes for applying to a heart or to a portion thereof said non-excitatory electric field, wherein said circuitry for generating a non-excitatory electric field generate a field with a timing relative to the activation of the heart or of a portion

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thereof, and of a magnitude, shape, duty cycle, phase, frequency, and duration [such as to be] which is unable to generate a propagating action potential.

43 41. (Amended) Apparatus according to claim 40, wherein the application parameters include [the] a delay time from the sensed activation.

32 43. (Amended) Apparatus according to [any one of] claim 30, further comprising feedback control means to measure at least one physiological response to the electrification of the electrodes, and to modify the application parameters of the non-excitatory electric field as a result of said responses in order to maintain said responses within a predetermined range of values.

32 44. (Amended) Apparatus according to [any one of] claim 30, further comprising synchronization circuitry, to synchronize the application of the non-excitatory electric field to the pacing signal generated by a pacemaker wherein the pacemaker and the remainder of the apparatus are contained in a common housing and use common electrodes.

32 45. (Amended) Apparatus according to [any one of] claim 30, further comprising synchronization circuitry, to synchronize the application of the non-excitatory electric field to the defibrillating signal generated by a defibrillator wherein the defibrillator and the remainder of the apparatus are contained in a common housing and use common electrodes.

47. 51 (Amended) Cardio-vascular surgery aiding apparatus, comprising circuitry for generating a non-excitatory electric field, and electrodes for applying to a heart chamber or to a portion thereof said non-excitatory electric field, wherein said circuitry for generating a non-excitatory electric field generate a field of a magnitude, shape, duty cycle, phase,

frequency and duration suitable to reduce the output flow, contractility, or pressure of said chamber, when surgery is performed on tissue perfused by the flow of said chamber, and wherein said field is [such as to be] unable to generate a propagating action potential, and thereafter performing the required surgical procedure on said area.

ADD THE FOLLOWING NEW CLAIMS:

-- 59. A method according to claim 1, wherein the application of the non-excitatory field is repeated during a plurality of heart beats, and wherein said repeated application is effected by gradually reducing the frequency at which the beats are skipped.

-- 60. A method according to claim 1, wherein the application of the non-excitatory field is repeated during a plurality of heart beats, and wherein said repeated application is effected by changing between beats the size of the portion of the heart to which the field is applied. --

IN THE ABSTRACT:

Add the Abstract set forth on a separate page attached hereto.